

The dorsal fluke measures 24 inches along its convexity, and is 11 inches high. The pectoral fin, at its junction with the trunk, is 7 inches across, and its greatest length (diagonal) is 19 inches; measured round the curve, it is 21.

The eye is $\frac{7}{8}$ inch long by $\frac{1}{2}$ an inch. The orifice of the ear is $2\frac{1}{2}$ inches behind the eye in a slightly diagonal direction, and is less in diameter than a puncture by an ordinary pin. The transverse diameter of the blow-hole is $1\frac{3}{4}$ inch, and the longitudinal 1 inch, the points being directed forwards.

The skin has been stuffed, though with much difficulty, owing to its want of tenacity; and the contrast of colour is now almost imperceptible.

The skeleton is in maceration, and will shortly be mounted.

The dimensions of the skull are as follows:—

	inches.
Total length	19 $\frac{1}{2}$
Length of nose	9
Width at orbit	10
,, notches	5 $\frac{3}{4}$
,, middle of nose	4 $\frac{1}{2}$
Length of lower jaw	15 $\frac{1}{2}$
Width at condyles	9

Teeth $\frac{25}{23}$ $\frac{24}{23}$; curved, and acute where not slightly worn.

Free Public and Derby Museum,
Liverpool, Feb. 17, 1863.

XXXI.—*On the Geographical Distribution and Varieties of the Honey-Bee, with Remarks upon the Exotic Honey-Bees of the Old World.* By Dr. A. GERSTÄCKER*.

AFTER a few observations upon domestic animals in general, and the difficulty attending their identification with any existing wild species, the author remarks that the mutual relation of the various races of Honey-Bees is less subject to doubt, since, notwithstanding that they have been described as distinct species by various authors, they really present no distinctive specific characters. Nevertheless, as with the other domestic animals, the native country of the Honey-Bee is unknown, as may be seen from the opinions expressed by the various entomologists who have written upon this subject. Latreille says of the supposed species of Honey-Bees, "One (viz. *Apis mellifica*, Linn.), which is predominant and most generally cultivated, probably originated in the north, also found in Barbary, &c."†, and therefore

* Abstract of a paper read to the eleventh 'Wander-Versammlung Deutscher Bienenwirthe,' Potsdam, 1862.

† Humboldt, Recueil d'Observations en Zoologie, p. 299.

believes that our northern Bee, from which he distinguishes the Italian Bee (*A. Ligustica*, Spin.), is probably indigenous to the North of Europe. This view is supported by Brun in his article on "Exotic Races of Bees"*; who regards the North of Africa as the southern limit of the Honey-Bee, and the centre of Europe as the centre of its existence. An opposite opinion was held by Lepelletier de Saint-Fargeau†, who says, "A native probably of Greece, and perhaps also of Anatolia, it has been transported over the whole of Europe, Northern Africa, &c." Kaden‡ thinks "that the native country of our Honey-Bees is to be sought under the hot zones, and that they have been introduced into Europe with some trouble;" and the latest writer on Bees, Von Berlepsch, regards this opinion as firmly established, saying §, "Our Bee is demonstrably indigenous in the hot southern countries of the Old World, where an almost perpetually serene sky enables it to bustle about in balmy airs through the whole year, with very little interruption. But at a very early period human civilization carried it into northern localities; and here, in consequence of the roughness and coldness of the climate, it is often compelled to remain for from three to six months in its dwelling,—contrary to its nature; for that so long a period of confinement is contrary to the mode of life originally impressed upon the Bee, opposed to its innate nature, is at once shown by the fact that it has no winter-sleep, like other allied insects indigenous to this country."

The grounds of these various opinions are easily discovered. Latreille, regarding the different races of Bees as distinct species, was evidently of opinion that each of these supposed species was indigenous in the country where it occurred; and Brun, following Latreille in considering the African Bees (*Apis fasciata*, Latr., from Egypt, *Apis Adansonii*, Latr., from Senegal, &c.) as distinct from *Apis mellifica*, Linn., erroneously placed the southern limit of the latter on the north coast of Africa. Lepelletier's opinion is evidently derived from the direction of European civilization; Kaden abstains from all evidence in support of his similar view; whilst Von Berlepsch endeavours to maintain it only by analogies which will not bear examination. Because the Wasps and Hornets, of which only females survive the winter, pass this season in a torpid state, there is no reason that Bees should do the same. The Bee must pass the winter in society, because the continuance of its existence depends upon this; hence it is impelled to lay up a supply of food against this

* Bienenzeitung, 1858, p. 37.

† Hist. Nat. des Hyménoptères, i. p. 401.

‡ Bienenzeitung, 1857, p. 214.

§ Die Bienen und die Bienenzucht: Mühlhausen, 1860, p. 461.

period, and is also endowed with the physical property of overcoming the cold by the close approximation of numerous individuals. What countries are particularly meant by Von Berlepsch under the term "hot southern lands of the Old World" does not appear: if Italy be one of them, we have the evidence of Pliny* that in his time the Bees of Italy were quite inactive for sixty days, that they became more lively after the rising of Arcturus, but still fed for some time on their stores. Even if the expression be intended to refer to the tropical regions of Africa, the activity of the Bees would even here be interrupted, or at least much hindered, for several weeks, by the rainy season, which occurs twice in the year; so that the difference between their existence in southern and northern latitudes would consist solely in the different duration of the interruption of their activity. That such climatal or local differences in the mode of life of one and the same species are not necessarily to be ascribed to its artificial dispersion is shown by many insects of all orders.

But although the long interruption to the activity of the Bees in northern regions can furnish no sufficient reason for their not being indigenous there, on the other hand it is difficult to prove that they existed among us before the spread of civilization, however probable this may be; at any rate, the expression that the Bee has "demonstrably" been introduced here is certainly not justified. The author considers that we are still to regard this question of the origin of the Honey-Bee as in a state of complete uncertainty.

The solution of this question must be effected, if effected at all, by the examination of historical data, coupled with the investigation of the geographical distribution of the different varieties of the Bee, the latter acquiring increased value when the historical investigation leads only to negative results. If we cannot prove historically the transportation of the Bee from one country to another, neither have we the least certainty that no such transportation took place; and we can by no means rest contented with the assumption that the ancients never thought of the transportation of such an animal as the Bee; for we know that honey and wax were, among the ancients, indispensable articles, and also that in Egypt, Attica, and Italy the hives were carried from place to place, with the view of increasing their weight. That the common Bee was the animal described by the Greek and Roman authors under the names of μέλισσα and *Apis* cannot be doubted, as (with the exception of the *Bombi*) this is the only social honey-gathering Bee found in the parts of the Eastern hemisphere known to the ancients, the

* Hist. Nat. lib. xi. cap. 15; see also lib. xi. cap. 5.

Bees found in Italy and Egypt, in Greece and Asia Minor, being specifically identical with the *Apis mellifica*.

The intimate connexion of the Bee with the mythology of the ancients, and especially with that of the Greeks, furnishes a certain proof of the high value put upon this insect by them, and at the same time demonstrates that it must have existed amongst them from time immemorial. Of all those natural products which the Greeks represented their deities as making use of in Olympus, or regarded as direct presents from the deities to mankind, we may be sure that they were not introduced from without at any determinable historical period. The origin of the Bee is carried back by Nicander of Colophon to the age of Saturn, in which, as is well known, the earth "flowed with milk and honey." By others it is brought into immediate connexion with the youngest dynasty of deities, as especially in the narrative of Euhemerus of Alexandria, according to whom, at the birth of Jupiter, the Curetes performed an armed dance, by the noise of which the Bees produced on the Island of Ceos by the hornets and the sun were attracted into Crete, and induced to feed the new-born god with honey, which they collected as the dew of heaven. In gratitude for this, according to Diodorus, Jupiter afterwards gave them a bronze or golden-bronze colour; that is, he gave them the colour of the noblest metal. Ovid applies a somewhat similar myth to Bacchus*.

Whatever value these myths may possess as historical documents, the customs founded upon them and continued for centuries and perhaps thousands of years, and the representations (such as sculptures and coins) which have come down to us, may be taken as evidence of them. Thus we have, in historical times, the Nephalia, in which honey was offered as one of the costliest sacrifices; and figures of the Bee occur upon the coins of several Greek cities, and, amongst others, upon those of the Island of Ceos. From Homer we learn that the Bee, by its production of honey, was closely connected with daily life from a period of high antiquity; and, from the fact that Homer enters into such full details upon everything which appears somewhat out of the ordinary way, we may be sure that he would not have referred to honey so briefly as he does †, if both it and the insect producing it had not been of every-day occurrence, but introduced shortly before his time. Against such an introduction, which could only have taken place from Asia Minor or Egypt, we have also Cicero's statement that, in the time of Xerxes, the Attic honey of Mount Hymettus was celebrated even in Asia; and Xenophon's narrative ‡ of the poisoning of his soldiers by

* Fasti, lib. iii. vv. 739-744.

† See Iliad, xi. v. 630.

‡ Anabasis, lib. iv. cap. 8.

honey "at Trebizond, where the people also had many beehives," seems to show that the Greek general was astonished at finding Bees kept by the barbarians. The antiquity of the culture of the Bee amongst the Greeks is shown not only by the laws of Solon, but also by an indirect reference in Hesiod, who, in verses 594, 595 of his *Theogony*, speaks of the "evil-doers," the drones, which the bees nourish in their "well-covered baskets," thus showing most clearly his acquaintance with the culture of the Bee.

Passing to Egypt, it is very remarkable that the Bee was either altogether omitted from the animal-worship of that country, or, at least, played a subordinate part in it. The Bee is not mentioned in Prichard's 'Analysis of the Egyptian Mythology.' Nevertheless some antiquaries, amongst others, Keferstein*, are of opinion that in the name *Apis*, given to the sacred Bull of the Egyptians, the sacredness of the Bee is indirectly indicated. However this may be, we know from the Old Testament that honey was used in the heathen sacrifices of Egypt—a custom which probably arose from the notion that it was necessary to offer to the sacred Bull what came from the Bull, it being a wide-spread superstition amongst the ancients that Bees were produced from the decomposing carcases of oxen. The domestication of the Honey-Bee in Egypt appears, at any rate, to be as old as this sacrifice of honey; so that its introduction into that country appears less probable than into Greece. The employment of the Nile by the Egyptians for obtaining an abundant harvest, which extends, as regards corn, to the most ancient periods, must have led to a similar proceeding in connexion with the cultivation of Bees. De Maillet† states, with regard to the latter, that Bees are very numerous in Egypt, and that a custom introduced by the ancients of sowing saintfoin as soon as the waters of the Nile leave the land uncovered, and sending the Bees from all parts of Egypt into Upper Egypt at the commencement of the season of flowering of the saintfoin, is still practised. The hives are packed in a pyramidal form upon boats specially adapted for their reception; in these they are conveyed up the river to the part where the flowers are earliest, and then gradually brought down the stream, stopping every two or three miles. As Greek civilization is generally supposed to have been influenced by the older civilization of Egypt, we may suppose that the custom prevalent in Attica in the time of Solon, of sending the Bees into favourable localities, was derived from Egypt; and upon this we may even found a second assumption, namely, that the Bees themselves may have been transported

* Oken's *Isis*, 1837, pp. 866 *et seq.*

† Deser, de l'Égypte, ed. Le Mascrier: La Haye, 1740, p. 117.

from Egypt into Greece in prehistoric times. These suppositions can neither be confirmed nor refuted absolutely; but, independently of the high antiquity of the Bee in Greece, the difference between the Egyptian and Greek races of Bees is such that the one could hardly have been derived from the other.

Among the Romans, according to Magerstedt*, the business of Bee-keeping occurs only at a comparatively late period; so that those who maintain the gradual transmission of the Honey-Bee from the south and east might here assume a transportal from Greece. This supposition may be supported by the fact that the Roman poets, such as Ovid and Virgil, in their myths place the origin of the Honey-Bee, not in Italy, but in Greece, which it might be concluded would not have been the case if the Bee had existed as long in Italy as in Greece. But such a conclusion is not admissible; for, just as the worship of the Romans accommodated itself to Greek views, and, indeed, based itself upon the Greek worship, so the myths and poetry of the Romans approached most closely to those of the Greeks. Nor does the late occurrence of Bee-keeping among the Romans furnish any support to the introduction of the Bee from Greece; for the constant wars of the Romans must have kept back all civilization even in Italy itself. It is, however, possible that the management of Bees, like many other occupations, may have been taught to the Romans by the Greeks, and perhaps practised chiefly by the latter. If, as Magerstedt's investigations prove, there was no Bee-keeping in Italy before the end of the second Punic war, and its considerable extension only dates from the time of Varro (B. C. 116), it seems very probable that it was introduced amongst the Romans by the Greeks, as the subjugation of Greece occurred between these two dates. In favour of this is Pliny's statement (lib. xi. cap. 9) that two Greeks, Aristomachus Solensis and Philiscus Thasius, busied themselves for a long time with observations upon Bees, and that the former did nothing for fifty-eight years but manage Bees.

The occurrence of Bees simultaneously in the South of Europe, Western Asia, and Egypt may not appear improbable to those who are inclined to ascribe to the Bee a southern origin. The comparatively slight diversity of climate in the above-mentioned countries certainly renders possible its original existence in all of them; and the opinions of authors differ essentially only on the one point, whether the Bee is indigenous to northern latitudes, or has been acclimatized under them. This question cannot be historically decided with absolute certainty; but it would

* Die Bienenzucht der Völker des Alterthums, insbesondere der Römer: 1851.

almost appear that the Bee existed in Northern Germany either originally or at least before any known direct intercourse of that region with Rome. Unfortunately, nothing is to be learnt upon this subject from Cæsar or Tacitus; but honey is mentioned by Diodorus Siculus*, a contemporary of Cæsar and Augustus, as being employed among the Gauls in the preparation of a beverage. Shortly after the time of Diodorus, we find in Pliny statements which, as they indicate with some degree of certainty the existence of wild Bees in Germany, are of more consequence in the present investigation. Pliny mentions† a swarm of Bees which settled in the camp of Drusus just before the successful battle near Arbalo; and in another place‡, when speaking of the goodness of honey from different districts, he describes a remarkably large honeycomb from Germany, which was 8 feet in length. That the Bees producing this swarm and honeycomb could have been introduced by the Romans is negatived by the shortness of the time elapsed since their access to Germany, and still more by the habits of the Romans themselves; nor is any such introduction of Bees mentioned by Pliny, whilst his statements and those of Diodorus involuntarily show that the Romans, on their first acquaintance with Gaul and Germany, found the Bee already there. From the statements of Pytheas, quoted by Strabo§, indeed, it would appear that honey was known in Northern Germany (Thule) at a much earlier period, namely, in the time of Alexander the Great (B.C. 300). The position of Thule is doubtful; but Pytheas probably derived his information from merchants of Marseilles, who visited the shores of the Baltic in search of amber. The introduction of the Bee into these northern regions by voyagers, whether Phœnician or Massilian, although not impossible, is very improbable, from the character of those people and the difficulty of transport. Hence, weighing all the historical evidence, it seems more probable that the Bee is indigenous in Germany than that it has been introduced by civilization; and this view is supported by a still more important circumstance, namely, the difference of our northern race of Bees from those of the southern and south-eastern parts of Europe and the bordering parts of Asia and Africa. Since the introduction of the Italian Bee into Germany, it has been sufficiently proved that, when it does not mix with the dark-coloured northern Bees, it remains perfectly constant in its characters: consequently it would be quite impossible that, even after the lapse of many years, the unicolorous northern Bee should have been developed from the variegated Italian form.

* Bibliothecæ Historicæ lib. v. cap. 26.

† Lib. xi. cap. 18.

‡ Lib. xi. cap. 14.

§ Rerum Geographicarum lib. iv. § 5.

The necessity of such a development cannot be denied if the Bee was introduced, in accordance with the spread of civilization, into Germany from Italy. It is true that the dark-coloured German form of Bee occurs in some parts of Italy, especially on the east coast of central Italy opposite to Dalmatia; but as these Bees are far less widely distributed in Italy, and even in ancient times were much less valued than the variegated Bees, and as the latter, being diffused over Liguria and Lombardy, would have been most likely to be transported into Germany, there seems to be the very smallest amount of probability that the dark variety which occurs only sporadically in Italy should have been selected for transmission. The remarkable circumstance that, before the introduction of the variegated Italian race into North Germany, the two races were in contact in the region of the Alps, may furnish the best proof against the derivation of the dark from the light variety. Almost everywhere in Southern Europe, the Bees either (as in the south of Spain) exhibit a nearly complete agreement in colour with the German form or (as in Dalmatia, Greece, and Asia Minor) the most gradual transitions from the German to the Italian race; on the other hand, exactly where a transference might most readily be supposed, the differences of colour are most distinctly preserved. Hence the introduction of the Bee into Germany might rather be supposed to have taken place from Greece or the south of Spain than from Italy; but we have no proof of any traffic between those countries in ancient times.

Amongst the reasons which might be adduced in favour of the opinion that the Bee is not indigenous in Northern Europe, but introduced from the south, the first to be noticed is the great power of adaptation to external circumstances exhibited by the Honey-Bee where it is known to have been introduced, as in America, which renders the possibility of its southern origin and northern acclimatization indisputable; and had the Bee confined itself within the limits of the warmer parts of America, this would have been evidence in favour of that view. But, from the statements of Barton, Josselyn, and others, it appears that the parts of America which have proved most favourable to the spread of the Bee, and in which it has even become wild, are those under *the same isothermal lines* as Northern Europe (Germany and Sweden), namely, the central and northern States, up to 47° N. lat., showing that it cannot be regarded as peculiarly a native of the south.

As a second reason for the southern origin of our Bees, it may be said that, in our northern regions, they are rarely, and in many places never, met with in a wild state, whilst this is commonly the case in Southern Europe and also in Asia and Africa.

This argument would be of force if our northern countries were still in the same condition of cultivation as the more southern parts of the Continent ; and we know from the Roman authors that, in ancient times, wild Bees occurred in the forests of Germany. As late as the year 1783, according to Krünitz*, the pursuit of the wild Bees was still followed in Neumark, Pomerania, Prussia, Lithuania, Courland, Livonia, Poland, &c., evidently because favourable localities still existed in those countries. If it be urged that, notwithstanding the change produced by cultivation, the Bees, if really indigenous to the north, might still easily, like the Humble Bees and Wasps, find a sufficiency of suitable localities for their hives, as well as of nourishment, it may be replied, in the first place, that they do become wild, although not frequently, under favourable circumstances ; and in the second, that they are with us far more completely domesticated than in southern regions. Hence there seems to be no evidence, either historical or from the present distribution of the varieties of Bees in the temperate parts of Europe, in favour of their introduction into the latter from warmer regions.

The author next proceeds to the investigation of the geographical distribution of the Honey-Bee beyond the boundaries of Europe. From the want of special knowledge on the part of travellers, it is often impossible to determine from their writings whether, in mentioning Bees, our Honey-Bee is intended ; so that an examination of specimens frequently becomes necessary.

It appears that our Honey-Bee does not occur, or, at least, has not been discovered as yet, in India and the Sunda Islands, but that over the whole of the rest of Asia, from the coast of Asia Minor to China, no other species except the *Apis mellifica* is found. The Honey-Bees mentioned in books of travels in India, Ceylon, &c., belong to species differing from the European Bee.

In Africa, on the contrary, *Apis mellifica* occurs in all parts, but no other species which can be confounded with it ; a few small black species of *Melipona* from the Guinea coast, which also collect honey, differ so much from our Bee, both in size and colour, that an uninformed traveller would hardly regard them as Bees at all.

For the full elucidation of the geographical distribution of the Honey-Bee in Asia the materials are but scanty. According to Loew's personal observations, the Bee is everywhere domesticated, and at the same time very frequently found wild in trees, on the islands and continent of Asia Minor. Eight workers collected by him in Rhodes, and one from Ephesus, exhibit various

* Oekonomische Encyklopädie, 4. Theil, p. 418.

colorations, directly uniting our northern Bee with the Italian race, and partly even show (by the pale scutellum) a tendency towards the Egyptian race. Of two specimens collected by Thirk, near Brussa in Asia Minor, one is dark-coloured and approaches the Greek form; the other, again, which is considerably smaller and lighter in colour, resembles the Egyptian; and it is evidently to Bees resembling this that the statement of Aristotle (Hist. Anim. v. 19) refers: "In Pontus there are very light-coloured Bees, which make honey twice in the month." This statement is repeated in nearly the same words by Pliny (Hist. Nat. xi. cap. 19). With the last-mentioned specimen, one collected by Pallas in the Caucasus also agrees.

The occurrence of the Honey-Bee in Arabia and Syria is proved by five specimens collected in Syria and one in Arabia Felix by Ehrenberg; the latter agrees exactly with the Egyptian form; and the others approach it very nearly, only differing in being a little larger. The Bee described by Brun (Bienenzeitung, 1858, p. 38) as occurring domesticated in Circassia and Persia is probably identical with ours, although, from want of specimens, this cannot be stated with certainty, as the light-coloured race of Bees occurs under a corresponding degree of latitude, but much further to the east, namely on the Himalaya; this is proved by a specimen taken there by Hoffmeister, which agrees in all essential characters with those from Syria. Lastly, the extension of the Honey-Bee to the coasts of the Pacific is proved by a specimen from China, which cannot be distinguished from the Egyptian form except by the dark colour of all the hair on the vertex. This is the *Apis cerana*, Fabr.

With regard to the northern extension of the Honey-Bee in Asia, the author cites an oral statement of Ehrenberg's, that, during his journey through Siberia, he found Bees kept in hives near Riddersk, in the Altai Mountains, lat. 51° N., long. 86° E. The northern limit is still to be ascertained: it seems probable that the Bee does not exist in the high northern latitudes of Siberia, as it is not mentioned in Erichson's catalogue of the Hymenoptera collected by Middendorf on the Boganida*.

Admitting the difficulty of determining on historical grounds whether the Honey-Bee is indigenous in those parts of Asia where it is found, or whether it has been introduced from the west, the author indicates that the forms of Bees there occurring do not, at least, contradict the notion that they may have been artificially dispersed. With the exception of Asia Minor, where the Bees are evidently of a mixed race, we find, over an extent of more than five thousand miles from west to

* Reise in den äussersten Norden und Osten Sibiriens, Zoologie, i. pp. 60 et seq.

east, only one and the same form of Bee, showing in particular places only extremely slight and probably accidental variations, and resembling the Egyptian form so closely that it may without difficulty be regarded as originating therefrom. Nevertheless this resemblance does not necessarily indicate genealogical affinity, as many other European insects (and, indeed, many Mammalia and birds) occur with a remarkably wide geographical range in Asia.

In Africa very different conditions prevail with regard to the races of Bees. Some districts lying under nearly the same latitudes exhibit very different forms; whilst, on the other hand, different varieties as to colour occur intermixed in the same localities. Thus in Algiers and Tangier, situated only about three hundred miles to the north of Egypt, there occurs a Bee perfectly identical in colour, hair, and size with that inhabiting North Germany; whilst in Egypt the form which is most distinguished from all others (*Apis fasciata*, Latr.) by its smaller size and light colour occurs, and apparently remains very constant in its characters. A form agreeing with the Egyptian in size and body-colouring, but differing in its darker hair, appears to be spread over the greater part of Central and Southern Africa, extending on the east coast from Abyssinia, through Mozambique and Caffraria, to the Cape of Good Hope, and occurring also on the west coast at the Senegal (*Apis Adansonii*, Lat.). It is very remarkable that at the Cape, together with this variegated form, all transitions to a nearly uniform dark one occur: the latter differ from the North German Bees only in smaller size—a peculiarity appertaining more or less to all the African Bees, with the exception of the Algerian. This uniformly dark form also occurs in Guinea together with a variety with light colour only on the anterior third of the abdomen, described by Lepelletier as *Apis nigritarum*, and, lastly, in the Mauritius and Madagascar, where, according to Latreille, it is constant in its dark colour (*Apis unicolor*, Lat.).

With regard to the diffusion of the Honey-Bee in Africa, the author cites the following statements from the writings of various travellers. In Algiers, according to Lucas*, the form agreeing with the northern one is everywhere abundantly distributed; it is kept in hives by the natives, and especially by the Kabyles. With respect to Egypt, the statement of De Maillet has been already quoted (p. 274) with regard to the sending the hives on boats along the Nile in search of a good store of nourishment. Niebuhr describes the proceedings of the Egyptian bee-keepers in precisely similar terms; whilst neither Ehrenberg nor Dr. Hartmann saw anything of the kind during their

* Explor. Scient. de l'Algérie, Zool. iii. p. 141.

travels in Egypt. The two latter agree in stating that in the countries situated to the south of Egypt, namely Nubia, Abyssinia, Sennaar, and Dongola, the keeping of Bees is certainly not extensively carried on, but that the honey and wax are taken when wanted from the wild Bees which build everywhere in abundance in clefts of rocks and hollow trees. On the other hand, Barth* mentions that he repeatedly met at least with a wild-bee keeping in the districts of Africa traversed by him. The first passage, relating to the neighbourhood of Kussada (between 12° and 13° N. lat., long. 8° E.), runs as follows:—“Vast *Adansonie* rose on every side with their immense naked branches, and also gave evidence of the industry of the inhabitants; for beehives, consisting of hollowed branches, were fixed in the summits of the Kuka. For bee-keeping this region appeared to be peculiarly adapted; for the pasture-ground, spreading far around, was adorned with sweet-smelling shrubs, which furnished nourishing food for the industrious Bees.” In the second passage, describing the Musssgu-lands lying south-west of Lake Tchad, Barth mentions the same practice as prevailing in that district. Our information upon the occurrence of the Bee upon the west coast of Africa relates chiefly to Senegambia. Webb and Berthelot, indeed, mention the Honey-Bee as inhabiting the Canary Islands †; and as they call it *Apis mellifica*, without any further statement, it may be concluded that it agrees with the northern variety. Of the light-coloured variety found in Senegambia, which he regarded as a distinct species, named *Apis Adansonii*, Latreille says:—“Adanson found this insect on the Senegal, in the trunks of trees;” and Adanson himself (*Voyage au Sénégal*) reports as follows upon it:—“In the neighbourhood of Podor, I fully expected, every day about noon, to be visited by one, two, or more swarms of Bees, which made their way into the cabin and compelled me to leave the ship. This occurred from October to December at Podor; probably in these three months the Bees quit the old hives in order to construct new ones: hives are then found of great size. Once I saw the roof of a negro hut, measuring sixteen square feet, which was entirely covered more than four fingers thick with inhabited combs. This is, it seems to me, a sufficient proof of the incredible quantity of such insects in this country. They build everywhere, but chiefly in the hollow trunks of old trees. This year they had built three large hives in our dwelling at Podor—one between the window-shutter and

* *Reisen und Entdeckungen in Nord- und Central-Afrika*, ii. p. 105, and iii. p. 214.

† *Hist. Nat. des îles Canaries*, ii. 2; *Entom.* p. 84.

the window, and two upon the flat floors of small closets." Adanson adds that the honey of these Bees is peculiar, being always fluid, and resembling a brown syrup.

Olivier * gives, from the MS. notes of Geoffroy de Villeneuve, son of the author of the 'Histoire Naturelle des Insectes de Paris,' the following account of the Bees of Senegambia. In descending from Guisguis, according to that traveller, numerous trees are seen bearing beehives, which are well made with straw, and have only a very small opening. The negroes of this district collect the honey twice in the year. The first harvest is about the end of May, and is the richest; the second takes place at the beginning of December.

The occurrence of the Honey-Bee in the interior of South Africa is proved by Andersson and Livingstone. The former says †—"Wild Bees very frequently build their nests in the gigantic edifices of the White Ants; in many years they are very numerous. The temper of these insects seems to be unusually peaceable and patient; for I have never observed that the people, when robbing their nests, were stung by them. These nests are usually smoked first of all; but I have often convinced myself that the naked savages approach them without fear, and remove them without any precautions." Livingstone's account ‡ runs as follows:—"Bee-keeping is practised in Londa; beehives are there found set upon trees in the most solitary woods. We often met waggons with large pieces of wax weighing from 80 to 100 pounds, and in every village such were offered to us for sale; but here (namely, on the Zambesi, 16° S. lat.) we never saw even a single beehive; the Bees were met with everywhere in natural cavities in the Mopané-trees. In many parts of the Batoka country, Bees exist in great abundance; and Sekeletu's tribute was often paid in large vessels of honey. I also saw a little wax in Quillimane, which was brought by the natives of this district."

The latter place is situated in Mozambique, which has already been indicated by the author as inhabited by Bees, from some specimens obtained there by Peters§. At the Cape of Good Hope "our Honey-Bee" was observed by Frauenfeld (Verhandl. der Zool.-bot. Gesellsch. zu Wien, 1860, p. 85); and there is no doubt that it is this species which is referred to in the following statement of Lichtenstein's, although he regards the Bee mentioned by him as belonging to a distinct species. He says—

* Enc. Méth., Insectes i., art. Abeille, p. 49.

† Lake N'Gami, or Explorations and Discoveries, &c., p. 132.

‡ Missionary Travels and Researches in South Africa, p. 614.

§ Peters, Naturwissenschaftliche Reise nach Mossambique, Zoologie, V., Insecten, p. 439.

“A peculiar species of Bee which inhabits these heights [near Lange Kloof] prepares the most beautiful honey from the flowers of the *Brunia*, and stores it in hollow trunks of trees and the clefts of the rocks. The honey is perfectly white; and the waxen cells are so thin that during their collection they melt up with the honey, which may then be conveniently poured into a bottle. Its taste is so fine that I cannot imagine that of *Hymettus* to have been better. It is often collected and used instead of sugar by the colonists of Lange Kloof”*. Lastly, with regard to the dark Bee occurring in the eastern islands of Africa, namely Madagascar and the Mauritius, Latreille, who describes it as *A. unicolor*, speaks as follows †:—“The honey of this species has a greenish tinge when it is contained in the combs; its colour and excellence depend upon the diversity of the plants of those regions, and upon the temperature. The inhabitants of Madagascar have understood how to avail themselves of the industry of these insects; for we possess a memoir by M. de la Nux upon the form of the beehives which are in use there.” Lepelletier’s statement (*Hist. Nat. Hyménoptères*, i. p. 403), that this Bee has been introduced into the Mauritius, is contradicted by Grant’s assertion (*Hist. of Mauritius*, 1801, p. 67), that the Mauritian Bee, which produces very fine honey, is indigenous to the island.

[To be continued.]

XXXII.—On some Species of Tree-Snakes (*Ahætulla*).

By Dr. ALBERT GÜNTHER.

A. *The Subgeneric Division PHILOTHAMNUS, A. Smith.*

THE whole of Tropical Africa is inhabited by a group of Tree-Snakes which are distinguished by a habit which is not excessively slender; by a normally shaped head; by smooth scales; by posterior longer teeth, not separated from the others by an interval, and not grooved; by a round pupil of the eye; and by a green coloration, almost always varied by the black skin between the scales, and by white dots placed at the base of each scale. Species of this group have been named by Sir Andrew Smith *Philothamnus*, and three different kinds were distinguished by him—*Ph. semivariatus*, *Ph. albovariatus*, *Ph. natalensis*. There can be no doubt that the second of these species is identical with *Dendrophis Chenonii*, Reinhardt, or with *Coluber irregularis*, Leach, of which we have the typical specimens.

At a later period, a similar Snake was described by Hallowell as *Chlorophis heterodermus*.

* *Reisen in südlichen Afrika in den Jahren 1803 bis 1806*, i. Band, p. 335.

† *Annales du Muséum*, v. p. 168.